



## Engineering Physics Laboratory

The Engineering Physics Lab for B.Tech First-Year students is designed to offer a strong, concept-oriented foundation aligned with the curriculum of Dr. A.P.J. Abdul Kalam Technical University, Lucknow (Uttar Pradesh). The Department of Applied Sciences and Humanities operates two parallel Physics laboratories, each equipped with a sufficient number of modern experimental setups that allow two students to work together on a single apparatus. This arrangement ensures enhanced individual participation, deeper conceptual understanding, and greater confidence in handling scientific instruments.

In total, the laboratory facilitates 16 experiments prescribed by Dr. A.P.J Abdul Kalam Technical University covering essential areas of physics relevant to engineering, such as interference, diffraction, laser optics, optical fibres, and other foundational topics in engineering physics. All equipment is regularly upgraded, and the labs now feature newly installed, state-of-the-art instruments to support high-quality learning.

Beyond the university curriculum, the laboratory includes value-added experiments such as the Franck-Hertz experiment and the measurement of free-space permeability and permittivity to verify the speed of light. These advanced experiments strengthen students' understanding of quantum mechanics and electromagnetic theory, offering them exposure to concepts that extend beyond the prescribed lab syllabus.

The well-structured lab environment, modern equipment, and additional experimental opportunities collectively ensure that students gain a comprehensive view of engineering physics, integrating theoretical knowledge with hands-on practical experience.

**The laboratory experiments are listed below:**

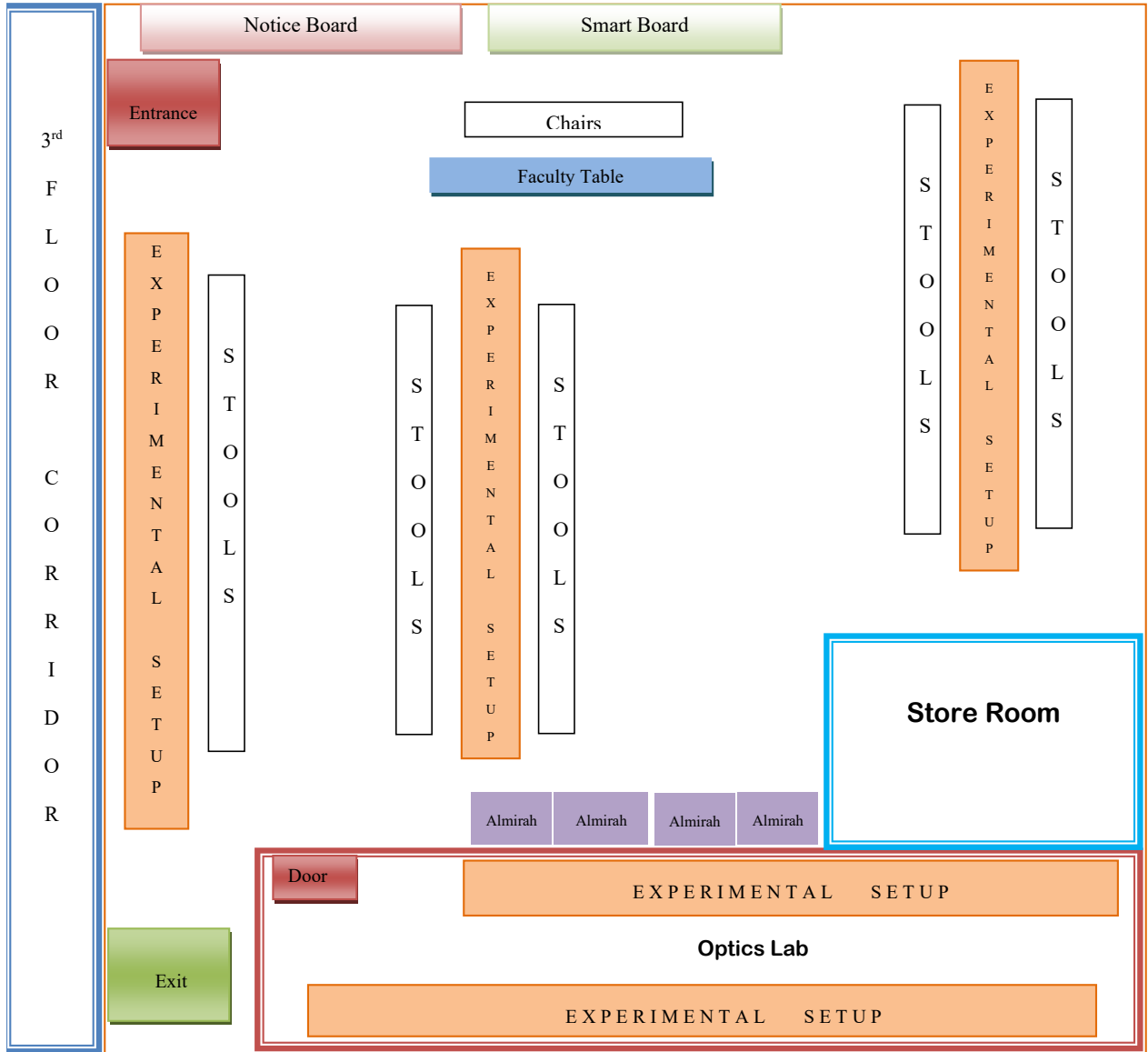
EXPERIMENT FROM AKTU SYLLABUS	
Sr. No	Name of The Experiment
1	To determine the wavelength of sodium light by Newton's ring experiment.
2	To determine the wavelength of different spectral lines of mercury light using plane transmission grating.
3	To determine the specific rotation of cane sugar solution using polarimeter.
4	To determine the focal length of the combination of two lenses separated by a distance and verify the formula for the focal length of combination of lenses.
5	To measure attenuation in an optical fiber.
6	To determine the wavelength of He-Ne laser light using single slit diffraction.
7	To study the polarization of light using He-Ne laser light.
8	To determine the wavelength of sodium light with the help of Fresnel's bi-prism.
9	To determine the value of acceleration due to gravity (g) using compound pendulum.
10	To determine the energy band gap of a given semiconductor material.



11	To study Hall effect and determine Hall coefficient, carrier density and mobility of a given semiconductor material using Hall effect setup.
12	To determine the variation of magnetic field with the distance along the axis of a current carrying coil and estimate the radius of the coil.
13	To verify Stefan's law by electric method.
14	To determine resistance per unit length and specific resistance of a given resistance using Carey Foster's Bridge.
15	To study the resonance condition of a series LCR circuit.
16	To draw hysteresis (B-H curve) of a specimen in the form of a transformer and to determine its hysteresis loss.
<b>VALUE ADDED EXPERIMENTS</b>	
17	The Franck-Hertz experiment to demonstrate the quantization of energy levels in atoms.
18	To determine the permeability and permittivity of air. To verify the relationship of speed of light with the permeability and permittivity of air.



## Lab Layout (Block-D, 303)





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